Circles: A Mathematical View. By Dan Pedoe. Mathematical Association of America, Washington, DC. (1995). 102 pages. $18.95.

Contents:

Preface. Chapter 0. Chapter I. 1. The nine-point circle. 2. Inversion. 3. Feuerbach's theorem. 4. Extension of Ptolemy's theorem. 5. Fermat's problem. 6. The centres of similitude of two circles. 7. Coaxal systems of circles. 8. Canonical form of coaxal system. 9. Further properties. 10. Problem of Apollonius. 11. Compass geometry. Chapter II. 1. Representation of a circle. 2. Euclidean three-space, E_3. 4. First properties of the representation. 4. Coaxal systems. 5. Deductions from the representation. 6. Conjugacy relations. 7. Circles cutting at a given angle. 8. Representation of inversion. 9. The envelope of a system. 10. Some further applications. 11. Some anallagmatic curves. Chapter III. 1. Complex numbers. 2. The Argand diagram. 3. Modulus and argument. 4. Circles as level curves. 5. The cross-ratio of four complex numbers. 6. Möbius transformation of the z-plane. 7. A Möbius transformation dissected. 8. The group property. 9. Special transformations. 10. The fundamental theorem. 11. The Poincaré model. 12. The parallel axiom. 13. Non-Euclidean distance. Chapter IV. 1. Steiner's enlarging process. 2. Existence of a solution. 3. Method of solution. 4. Area of a polygon. 5. Regular polygons. 6. Rectifiable curves. 7. Approximation by polygons. 8. Area enclosed by a curve. Exercises. Solutions. Appendix: Karl Wilhelm Feuerbach, Mathematician (Laura Guggenbuhl). Index.

Empirical Methods for Artificial Intelligence. By Paul R. Cohen. MIT Press, Cambridge, MA. (1995). 405 pages. $55.00.

Contents:

Preface. Acknowledgments. 1. Empirical research. 2. Exploratory data analysis. 3. Basic issues in experiment design. 4. Hypothesis testing and estimation. 5. Computer-intensive statistical methods. 6. Performance assessment. 7. Explaining performance: Interactions and dependencies. 8. Modeling. 9. Tactics for generalization. References. Index.

Reasoning about Knowledge. By Ronald Fagin, Joseph Y. Halpern, Yoram Moses, and Moshe Y. Vardi. MIT Press, Cambridge, MA. (1995). 477 pages. $45.00.

Contents:

Preface. 1. Introduction and overview. 2. A model for knowledge. 3. Completeness and complexity. 4. Knowledge in multi-agent systems. 5. Protocols and programs. 6. Common knowledge and agreement. 7. Knowledge-based programming. 8. Evolving knowledge. 9. Logical omniscience. 10. Knowledge and computation. 11. Common knowledge revisited. Bibliography. Index. Symbol index.

Improving Science Education. Edited by Barry J. Fraser and Herbert J. Walberg. University of Chicago Press, Chicago, IL. (1995). 233 pages. $28.00, £22.50.

Contents:

The National Society for the Study of Education. Board of Directors of the Society, 1994–95; the Committee for the Series on Contemporary Educational Issues; contributors to this volume. Foreword. Acknowledgments. 1. Introduction and overview (Herbert J. Walberg and Barry J. Fraser). 2. Science curricula in a changing world (John Keeves and Glen Aikenhead). 3. Students' conceptions and constructivist teaching (Reiders Duit and David Treagust). 4. Instructional strategies (Avi Hofstein and Herbert J. Walberg). 5. Student assessment and curriculum evaluation (Wayne W. Welch). 6. Classroom learning environments (Barry J. Fraser and Theo Wubbels). 7. Teacher change and the assessment of teacher performance (Kenneth Tobin). 8. Use of computers (Tjeerd Plomp and Joke Voogt). 9. Gender equity (Lesley Parker, Léonie Rennie, and Jan Harding). 10. Cross-national comparisons of outcomes in science education (John Keeves).

Artificial Minds. By Stan Franklin. MIT Press, Cambridge, MA. (1995). 449 pages. $30.00.

Contents:

Preface. 1. Mechanisms of mind. 2. The nature of mind and the mind-body problem. 3. Animal minds. 4. Symbolic AI. 5. The first AI debate. 6. Connectionism. 7. The second AI debate. 8. Evolution, natural and artificial. 9. Artificial life. 10. Multiplicity of mind. 11. What do I do now? 12. What's out there? 13. Remembering and creating. 14. Representation and the third AI debate. 15. Into the future. 16. An emerging new paradigm of mind? References. Index.

Digital Mantras: The Languages of Abstract and Virtual Worlds. By Steven R. Holtzman. MIT Press, Cambridge, MA. (1994). 321 pages. $14.95.

Contents.

Preface. Prelude: Jispa. I. Structures. 1. Pānini. 2. The circle of fifths. 3. Nāgārjuna. 4. The Second Viennese School. 5. Kandinsky. 6. Postwar serialism. 7. Chomsky. 8. Coda. Interlude: Pokara. II. Structure manipulators. 9. Calculus ratiocinator. 10. "Natural language". 11. Composing machines. 12. The visual world. 13. The virtual world. 14. Reflections. Interlude: A Gompa. 15. GGDL. 16. A digital aesthetic. 17. Dissonance. 18. Deep structure. 19. Vibration. Postlude: Bara Lacha La. Notes. Bibliography. Index.